35 ~~53~~. (new) The method of Claim ~~17~~ 1 wherein the peptide has the formula

X-LIFLLVLLDYQGMLPVCPLIPGSSTSTGPCRTCMT-Z (SEQ ID NO: 272).

36 ~~54~~. (new) The method of Claim ~~17~~ 1 wherein the peptide has the formula

X-IFLLVLLDYQGMLPVCPLIPGSSTSTGPCRTCMTT-Z (SEQ ID NO: 273).

37 ~~55~~. (new) The method of Claim ~~17~~ 1 wherein X is an acetyl group, and Z is an amido group.--

**REMARKS**

Claims 16-19 were pending in the instant application. Applicants have amended the claims to overcome and/or obviate the Examiner's rejections with respect to the remaining claims, and to place the claims in condition for allowance.

Claims 16, 18, and 19 have been canceled without prejudice to Applicants' right to pursue the subject matter of the canceled claims in future applications. Claim 17 has been amended and new, dependent claims 20-55 have been added. With entry of this amendment, therefore, Claims 17, and 20-55 are now pending. A copy of the claims which will be pending as of entry of this amendment is included herewith as Exhibit A.

Because alternative expressions using "or" are an acceptable alternative to Markush expressions (M.P.E.P. §2173.05(h)), Applicants have chosen to amend Claim 17 in favor of using the former type of expression. New dependent Claims 20-54 have been added to cover individual sequences already recited in Claim 17. Likewise, dependent Claim 55 has

been added to recite specific embodiments of the groups "X" and "Z" recited in Claim 17.

The above made amendments are fully supported in the instant specification as originally filed, and do not, therefore, constitute the addition of new matter. As stated above, Applicants believe the amendments obviate and/or overcome the Examiner's rejection of the pending claims, and position the claims into condition for allowance. Accordingly, entry of the foregoing amendments and remarks is respectfully requested.

## 1. THE REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH, SHOULD BE WITHDRAWN

Claims 16-19 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner contends: (1) that Claims 16 and 18 are vague and indefinite as written because it is unclear what is meant by "recognized"; and (2) that Claims 17 and 19 do not employ the appropriate sequence identifiers. As discussed below, Applicants assert that these rejections have been obviated and/or overcome.

At the outset, it is noted that Claims 16, 18, and 19 have been canceled without prejudice, leaving only Claim 17 remaining of the claims rejected in this section. Thus, none of the pending claims recites the term "recognized."

With respect to sequence identifiers in Claim 17, Applicants respectfully point out that Claim 17 was amended to include the appropriate SEQ ID NOS. in an amendment filed in connection with the instant application on September 12, 1997.

Accordingly, Applicants believe the pending claims are in full compliance with the regulations concerning nucleotide and/or amino acid sequence disclosures as set forth under 37 C.F.R. §1.821. A copy of the claims which will be pending as of entry of this amendment is included herewith as Exhibit A.

For the reasons set forth above, Applicants assert that the rejection under 35 U.S.C. §112, second paragraph, has been overcome and should therefore, be withdrawn.

## 2. THE REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH, SHOULD BE WITHDRAWN

Claims 16-19 have been rejected under 35 U.S.C. §112, first paragraph, for lack of enablement. Specifically, the Examiner contends, first that the specification does not enable the full scope of the claimed methods in that the methods encompass a large number of viruses and peptides derived from a large number of proteins. Second, while acknowledging that the specification enables methods for inhibiting cell fusion, the Examiner contends that the specification does not enable methods for "inhibiting transmission" or "neutralizing hepatitis B virus." Further, while acknowledging that the specification is enabled for *in vitro* methods, the Examiner contends that the specification is not enabled for *in vivo* methods. As discussed below, Applicants submit that the claim amendments and/or remarks set forth herein, have overcome and/or obviated these rejections.

First, Applicants point out that upon entry of this amendment, each of the pending claims will recite methods for using **specific** peptides recited in Claim 17 to inhibit

transmission of hepatitis B (HepB) virus to cells. Each of the peptides has an amino acid sequence of a region of HepB surface antigen protein which is identified by one of the computer associated sequence search motifs of the invention shown to successfully identify peptides which exhibit potent anti-viral activity (Section 22, page 390, line 20 through page 391, line 21).

Further, although the assays discussed in the application are *in vitro* ones, they do, indeed, reflect anti-viral activity *in vivo* activity, including inhibition of viral transmission. In particular, Applicants invite the Examiner's attention to Section 6 (page 356, line 25 through page 363, line 5) of the instant specification. In this example, DP178 is shown to have potent anti-HIV activity in the same *in vitro* assays as those taught in Section 22 for determining the anti-HepB activity of the proteins of the instant invention. DP178 is also known to exhibit anti-HIV activity and inhibit transmission of HIV *in vivo*, as assayed by the HuPBMC-SCID mouse model, and by human clinical trials. Thus, the *in vitro* assay in Section 6 correlates well with the anti-HIV activity of Dp178 *in vivo*.

The peptides recited in the pending claims of the instant application are specific DP178- and DP107-**like** peptides having an amino acid sequence of a region of the HepB surface antigen protein identified by one of the computer associated sequence search motifs of the invention -- ALMOTI5, 107x178x4, or PLZIP. Anti-HepB activity of these peptides is exhibit to result from the same mechanism as the anti-HIV activity of

DP178, namely the peptides' inhibition of viral-induced fusogenic events.

Applicants submit, therefore, that the *in vitro* cell fusion assays taught in Section 22 of the instant specification would, indeed, predict anti-HepB activity of the same peptides (*i.e.*, of DP107- and DP178-like peptides derived from a HepB protein) *in vivo*, including the inhibition of transmission of HepB virus to cells.

For all of the above reasons, Applicants believe the pending claims are fully enabled within the meaning of 35 U.S.C. §112, first paragraph. Applicants respectfully request, therefore, that the rejections under 35 U.S.C. §112, first paragraph, be withdrawn.

**MISCELLANEOUS**

Applicants acknowledge the Examiner's objections to the abstract of the invention. Upon a finding of allowable subject matter, Applicants will amend the title and abstract to reflect the allowable subject matter.

**CONCLUSION**

Entry of the foregoing amendments and remarks into the file history of the above-identified application is respectfully requested. Applicants believe that the foregoing amendments and remarks place the claims in condition for allowance. Withdrawal of all rejections and reconsideration

of the amended claims is requested. An allowance is earnestly sought.

Respectfully submitted,

Date May 11, 1998

by

Laura A. Coruzzi 30,742
Laura A. Coruzzi (Reg. No.)

PENNIE & EDMONDS LLP
1155 Avenue of the Americas
New York, New York 10036-2711
(212) 790-9090

by

Nicholas C. Grygo
Reg. No. 39,201